

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An optical structural body ~~formed by irradiating, to comprising:~~ a laser light transmitting substrate, ~~a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive index, thereby to form, at the light condensing position,; and~~ a region having a periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated at a light condensing position of the substrate, wherein the light condensing position is defined by irradiating, to the substrate, a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive-index to the substrate.

2. (Original) An optical structural body according to Claim 1, wherein principal planes of the periodic structure defined as the planes in which the high refractive-index zones or the low refractive-index zones are being joined to one another, are formed in parallel to the polarized magnetic field direction of the irradiated pulse laser.

3. (Original) An optical structural body according to Claim 1, wherein the pitches in the periodic structure are formed in dependence on the wavelength of the irradiated pulse laser, the number of irradiated pulses or the pulse energy.

4. (Currently amended) An optical structural body ~~according to Claim 1 comprising:~~ a laser light transmitting substrate; and a region having a periodic

structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated at a light condensing position of the substrate, wherein the light condensing position is defined by irradiating, to the substrate, a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive-index to the substrate, wherein the pitches in the periodic structure are 1 μm or less.

5. (Original) An optical structural body according to Claim 1, wherein the region having the periodic structure is spherical.

6. (Currently amended) An optical structural body ~~according to Claim 5~~ comprising: a laser light transmitting substrate; and a region having a periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated at a light condensing position of the substrate, wherein the light condensing position is defined by irradiating, to the substrate, a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive-index to the substrate, wherein the region having the periodic structure is spherical, wherein and the diameter of the spherical body is in the range of 0.1 μm to 1 mm.

7. (Original) An optical structural body according to Claim 1, wherein the region having the periodic structure is in the form of a cord having a circular section, or in the form of a column.

8. (Original) An optical structural body according to Claim 1, wherein a plurality of regions each having the periodic structure are repeatedly formed at regular intervals.

9. (Currently amended) An optical structural body ~~according to Claim 8~~ comprising: a laser light transmitting substrate; and a region having a periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated at a light condensing position of the substrate, wherein the light condensing position is defined by irradiating, to the substrate, a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive-index to the substrate, wherein a plurality of regions each having the periodic structure are repeatedly formed at regular intervals, wherein and the predetermined intervals are in the range of 1 μ m to 1 mm.

10. (Currently amended) An optical structural body ~~according to Claim 1~~ comprising: a laser light transmitting substrate; and a region having a periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated at a light condensing position of the substrate, wherein the region having the periodic structure is formed in an isotropic material which originally presents no birefringence phenomenon.

11. (Original) An optical structural body manufacturing method comprising the steps of:

irradiating, to a laser light transmitting substrate, a single condensed pulse laser light beam having an energy amount which causes a photoinduced change in refractive-index; and

forming, at the condensing position, a region having a periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being formed.

12. (Original) An optical structural body manufacturing method according to Claim 11, wherein the pulse width of the pulse laser light is in the range of 10^{-12} ~ 10^{-15} seconds.

13. (Original) An optical structural body manufacturing method according to Claim 11, wherein the pulse repetition frequency of the pulse laser light is not greater than 100 MHz.

14. (Original) An optical structural body manufacturing method according to Claim 11, wherein the pulse of the pulse laser light is a single pulse.

15. (Original) An optical structural body manufacturing method according to Claim 11, wherein the power density of the pulse laser condensed on the substrate, is not less than 10^8W/cm^2 .

16. (Original) An optical structural body manufacturing method according to Claim 11, wherein the pulse energy of the pulse laser condensed on the substrate, is in the range of $0.1 \mu\text{J/pulse}$ to $10 \mu\text{J/pulse}$.

17. (Currently amended) An optical structural body manufacturing method ~~comprising the step of condensing pulse laser on a glass substrate to utilize interference of the pulse laser with plasma generated inside of the condensing~~

~~position, thus according to claim 11, wherein the step of forming a the region having a the periodic structure in which high refractive index zones and low refractive index zones are being repeatedly formed~~ is caused by utilizing interference of the pulse laser light with plasma generated inside of the condensing position.

18. (Original) An optical element characterized in that there is utilized, as a polarizer, a diffraction grating, a reflector, a filter or an optical attenuator, an optical structural body formed by irradiating, to a laser light transmitting substrate, a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive-index, thereby to form, at the light condensing position, a region having a periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated.

19. (Original) An optical element characterized in that light of wavelength division multiplex is incident upon a region having a periodic structure of an optical structural body, thereby to increase the reflectance of a specific wavelength in dependence on the periodic structure, the optical structural body being formed by irradiating, to a laser light transmitting substrate, a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive-index, thereby to form, at the light condensing position, the region having the periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated.

20. (New) An optical structural body formed by irradiating, to a laser light transmitting substrate, a single condensed pulse laser light beam having an energy amount causing a photoinduced change in refractive-index, thereby to form, at the

Appl. No. 10/658,107
Amdt. Dated July 24, 2007
Reply to Office Action of April 25, 2007

Attorney Docket No. 81872.0053
Customer No.: 26021

light condensing position, a region having a periodic structure in which high refractive-index zones and low refractive-index zones are repeatedly being generated.